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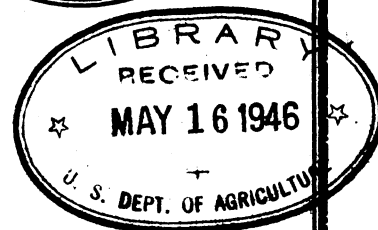
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The EXTENSION ANIMAL HUSBANDMAN



**UNITED STATES DEPARTMENT
OF AGRICULTURE
WASHINGTON,
D.C.**

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Washington, D. C.

THE EXTENSION ANIMAL HUSBANDMAN

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K. F. Warner, Senior Extension Meat Specialist.

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PROGRESS OF THE REGIONAL SWINE BREEDING LABORATORY

By W. A. Craft, Director
Regional Swine Breeding Laboratory, Ames, Iowa

The Regional Swine Breeding Laboratory, established in 1937, now has a program of research well under way. Investigations in swine breeding which have been initiated in the laboratory are being directed toward the improvement of swine through the application of breeding methods. Progeny testing and production recording constitute a part of the program in progress. Improvement of standards for evaluating breeding animals, market hogs, and hog carcasses is being attempted also.

Objectives

The primary objectives of the project are to test adequately the application of certain breeding methods for general improvement of swine and to develop measures of such characters as productiveness of sows, rate and economy of gain, general vigor, and carcass merit which may be used effectively to supplement the methods of selection now being generally followed.

General Procedures

The first procedure initiated was for the purpose of forming a number of distinctly different inbred lines by inbreeding within a breed, to be followed by converging the inbred lines in single and double crosses, three-way crosses, and top crosses of boars of the different lines on random-bred sows to measure the effectiveness of inbred lines in improving the performance of swine. It was believed that this procedure would be the one most likely to succeed; therefore, a thorough test of its usefulness has been planned.

In general three different intensities of inbreeding are being followed: (1) that represented by using four sires in a herd closed to outside blood, (2) that represented by using two sires in a herd closed to outside blood, and (3) that represented by using only one sire in a herd closed to outside blood. The first procedure should result in an increase of approximately 3 to 5 percent in the inbreeding per generation, the second about 6 to 7 percent, and the third about 11 to 12 percent per generation. It is apparent, therefore, that the procedures being followed involving inbreeding in the laboratory for establishing inbred lines within a breed are pushing pure breeding forward about 6 to 30 times as fast as the breeders themselves are doing, since swine breeders have been advancing the inbreeding approximately 0.5 percent per

generation through the breeding practices followed by them. Theoretically, an increase of 1 percent in inbreeding means that 1 percent of the "unfixed" inheritance when the inbreeding began becomes "fixed" as a result of the corresponding increase in inbreeding. It is this "fixing" of inheritance that gives the breeder increasing control over inheritance. Thus we believe it important to learn how fast the "fixing" can be pushed along, how far it must be pushed to establish distinctly different lines within a breed, and if some system of converging inbred lines may give a greater measure of control over inheritance than the methods being followed generally at present permit.

It is not expected, however, that all inbred lines will produce equally favorable or equally unfavorable results in crosses within a breed, or in top crosses of inbred boars on noninbred sows, nor is it expected that all inbred lines started will survive. It will be necessary, therefore, to try out the surviving lines for the purpose of locating those that yield best results. Accordingly, tests will be made from time to time as the inbreeding in each line progresses.

The second procedure being tested is that of selection within a herd closed to outside blood in which the inbreeding is to be kept at a negligibly low level based entirely on rate of growth to 180 days of age as a means of advancing the improvement of swine.

A third procedure is that of selection in a herd started from crossing two established bacon breeds and subsequently closed to outside blood, selection being based on performance and carcass merit.

Attention is being given also to measures which may be used in selection to supplement effectively rate and economy of gain. A plan is being tried which involves scores for individual merit and systematic description of various characteristics which may permit finally an evaluation of the relationship of these various characteristics with such characters as rate of growth, economy of gain, productiveness of sows, general vigor, and quality of carcass.

The breeds being used at present include the Poland China, Duroc-Jersey, Hampshire, Tamworth, and Landrace. Other breeds may be added when facilities and circumstances permit.

Results

During the two years in which the laboratory has been operating, stock has been procured and increased for the establishment of the inbred lines and the development of the cross-lines. There are now 24 inbred lines being formed within the Poland China breed. Twelve of these are located at the Iowa station, nine at the Minnesota station, and three at the Missouri station. Ten inbred lines of the Duroc-Jersey breed are

in progress; six of these are at the Nebraska substation, North Platte, Nebraska, and four at the Oklahoma station. Three lines of the Hampshire breed have been started; two of these are at the Illinois station, and one at the Missouri station. Two cross-lines of Landrace-Tamworth are in progress; one of these is at the Minnesota substation, Grand Rapids, Minnesota, and the other is on the Pioneer Hibred Corn Company Farm, Grimes, Iowa (the latter line being a co-operative project between the Iowa station and J. J. Newlin, farm manager). One line of Landrace is being maintained at the Iowa station. The breeding herd, including the six cooperating stations, consists of approximately 500 sows and 60 boars at the present time.

The first crosses between lines and top crosses of inbred boars on noninbred sows were initiated in a small way during the last year. Results of these are incomplete at this time.

A scheme for evaluating and combining the values of different items of performance was worked out last year by Dr. Lush, project leader of the Iowa station. The scheme was derived from a collective study of data on items of performance of pigs in the laboratory project, data from pigs in record-of-performance studies which had been conducted at the Iowa station previous to the establishment of the swine breeding laboratory, and data relating to prices of different market grades of hogs. The procedure places equal value on economy of gain, merit of carcass, and individual score of the pig at 225 pounds' weight with rate of growth to 180 days of age having twice the value of either of the other items. Other characters such as productiveness of sows, and performance of litter mates are being studied for the purpose of including these in the scheme. Careful study made of the scores of pigs at market weight during last year indicates that the scoring procedure probably has merit.

An examination of data on pigs at weaning age with respect to predictive value on performance subsequent to weaning revealed that weight at weaning age is the best indicator that we now have of subsequent performance but its value is rather low. The latter studies were made by Mr. Baker, project leader of the Nebraska station, and Dr. Comstock, assistant project leader of the Minnesota station. Since dependable measures are needed for preliminary selection at an early age, especially in the case of boars, not only in an experimental project but also by swine breeders, studies of this sort are to be continued until all the possibilities are explored.

A detailed study with respect to the influence of heredity on rate of growth to 180 days of age was completed during the year by Dr. Whatley at the Iowa station. (Dr. Whatley is now at the Oklahoma station).

The general conclusion derived from the study is that weight at 180 days of age is accounted for by hereditary factors to an extent ranging between 20 and 60 percent. It is encouraging to have these values based as they are on an intensive study of data, since even the lower limit would permit some further progress in selecting for rate of gain in swine.

In summary, cooperation has been established and is in progress with six State experiment stations. Thirty-eight inbred lines within four different breeds and two cross-lines of two bacon breeds are now in progress. Inbreeding is being advanced at three different levels in the inbred lines. Measures for evaluating and combining the values of different items of performance are being tested with the emphasis placed on productiveness of sows, rate and economy of gain, vigor, and quality of carcass. Analysis of data now available indicates that further progress in selection for rate of growth in swine is possible.

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CHICAGO "INTERNATIONAL" WEEK NOTES

Chairman McCann announced that a total of 88 persons were in attendance at the annual meeting of the extension section of the American Society of Animal Production in Chicago on December 1 and they came from all sections of the country. The program was well received and was run off in sparkling fashion by the efficient chairman. W. W. Derrick was added to the officers' staff as vice chairman with the retirement to the ranks of Mr. McCann. Paul Newell of Mississippi was promoted to the chairmanship of the group with W. B. Connell of Pennsylvania as secretary for the ensuing year.

As always is the case in Chicago at this time, there are far too many things going on at the same time. This year the American Farm Bureau Federation's annual meeting was an added event. All in all it was a busy period. Among the highlights were the winning of the grand champion steer and barrow awards by 4-H Club boys - the Ohio State win in the student's livestock judging contest - the meat judging contest first award to Wisconsin - the winning of the non-collegiate livestock judging contest by the Texas team and Penn State's again taking the grand champion wether award. 4-H Club demonstration teams in livestock shipping loss prevention from several sections of the country participated in a national contest on Monday with the Nebraska team being pronounced winner. This activity is sponsored by the National Live Stock Loss Prevention Board.

At the annual meeting of the Horse and Mule Association of America a number of 4-H colt club members from various States were presented with achievement medals by A.B. Hancock, president of the organization. --C.D.L.

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INDIANA MARKET LAMB SHOWS

By Henry Mayo, Extension Animal Husbandman
and
F. M. Shanklin, 4-H Club Department,
Purdue University.

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A few years ago the bulk of the spring lamb crop in Indiana was marketed in the fall months. Many of these lambs went to market, not because they were of the most desirable weight and finish, but because the pasture supply was gone and they were no longer making satisfactory gains. In fact, many of the lambs were long-tailed and the ram lambs were in thin condition. This made Indiana lambs very unpopular on the eastern markets.

In order to demonstrate good market lambs and their most efficient production, the Indianapolis stock yards interests decided to join forces with the Purdue Agricultural Extension Service in sponsoring an annual district market lamb show to be held at the Indianapolis Stock Yards. The first show was held in the first part of July 1930.

It was agreed that in order to secure the maximum educational value from this show, it must be closely allied with some definite project back on the farm. With this in mind, the only lambs eligible for the show were lambs belonging to 4-H lamb club members. Classes were arranged for pens of three and pens of five lambs.

One of the first influences which may be credited to the summer lamb shows was the discovery on the part of many farmers and 4-H club members that they could produce market-topping lambs ready to sell in June at four months of age. They found that by providing an abundant supply of green succulent pasture such as the clovers, oats, or rape to supplement permanent pastures after May 20 or June 1, it was possible to keep the ewes milking liberally and for a longer period of time so that the lambs would be fat at weights of 75 to 95 pounds before the extremely hot summer weather. Following this plan, lambs were never weaned but were sold directly from their mothers with little or no grain being fed.

The selection of suitable rams was early recognized to be of paramount importance. These lamb shows have caused farmers and 4-H club members to buy more good thick-fleshed, short-coupled, purebred rams than has any other influence within the State. Early in the project the more successful exhibitors demonstrated that there

was no substitute for blocky, thick-fleshed rams in producing superior market lambs.

The practice of grading all the lambs exhibited according to standard market grades, before they are placed, was instituted at the fourth market lamb show and has been continued ever since. When the lambs are brought out for judging, each lamb is marked on the back with blue, red, yellow, or green chalk to indicate whether it is of Choice, Good, Medium, or Common grade before any of the pens are placed. This practice has had a strong educational influence and has added meaning to the placings and to the show in general. A summary of the total number of lambs in each of the grades at the various lamb shows has served as an indicator of the quality of work being done.

Inspection of the carcasses of the better pens of lambs on the following day by the judges, packing company officials, and spectators has further proved to increase confidence in the judging.

Before many years, the lamb improvement program was bringing better lambs to the Indianapolis market. This improved standard was reflected in the eastern demand and very logically the price level of Indianapolis lambs began to rise. More buyers were sent to the Indianapolis market to get their share of the good lambs. Gradually the market has improved until at the present time Indianapolis is considered one of the best lamb markets in the United States. The summer lamb shows, together with well-planned projects, deserve credit for much of the improvement in the quality of the spring lambs.

The stock-yard companies at various other Indiana markets had been among the most interested observers of the Indianapolis market lamb improvement program and it was not long before the educational possibilities of these shows became evident to them. In 1934 the Muncie Stock Yards interests held their first show and since that time additional shows have been organized until at the present time lambs are exhibited in four parts of the State - Indianapolis, Muncie, Fort Wayne, and Evansville.

One of the biggest features at each of these market lamb shows is the auction sale held during the afternoon of the day of the show. Since the lamb shows are held at the stock yards of the various terminal markets and the quality of the lambs is above the average of any day's market, the buyers have given excellent support to the auctions. Throughout the years the sales have averaged well above the top of the market. This average has been made by the fact that each pen of lambs has sold for all it was worth and not because of any extremely high prices for any individual or pen of lambs. This fact

alone has had much to do with the continued success of these shows because the various exhibitors and their parents have felt that they could be assured of at least the strength of the market as a payment for their extra time and effort, even though they might not be able to win a first place.

Since their beginning the lamb shows have been conducted on almost the identical basis on which they were started. The only change of any great account has been that the Muncie and Fort Wayne shows have invited adult members of the Hoosier Gold Medal lamb project to exhibit groups of lambs in a special Gold Medal lamb class.

Previous to 1938, the Hoosier Gold Medal lamb project was based on production alone. The lambs were required to average 75 pounds in weight when the first lamb was five months old. Farmers were glad for an opportunity to exhibit groups of ten lambs, because the lambs were fat and ready to sell and the cooperators were interested in seeing how their lambs compared with those of their neighbors.

The exhibiting of these groups of Gold Medal lambs added a stimulus to the educational program. Enrollment in the project increased in the areas in which the shows were held and more attention was paid to using good rams. In other words, the project became more effective.

In 1937 the requirements of the Hoosier Gold Medal Lamb project were changed so that cooperators were required not only to make a minimum gain on their lambs but also to exhibit pens of lambs in special Gold Medal lamb classes. Classes were arranged for pens of five wether lambs to be shown by adult Gold Medal Club members at the Fort Wayne and Muncie shows. The Indiana Livestock Breeders' Association which with the Purdue Animal Husbandry Department sponsors these Gold Medal projects, makes gold, silver, and bronze medal awards to the top three-fourths of the exhibitors. This project has appealed to practical farmers because the objectives are practical and worthwhile. It is more than just a lamb show; it is a record of performance based on practical objectives.

One of the greatest values which has come from the market lamb shows has been the mutual understanding and respect which have developed between the educational forces of the State, stock yards officials, selling agencies, processors, livestock producers, and 4-H Club members. It has not only made possible the execution of a very practical project but it has paved the way for projects with other classes of livestock.

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"It may be safe to underestimate a man's information but never his intelligence."
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BEEF CALF CLUB WORK IN NORTH CAROLINA

By L. I. Case, Extension Animal Husbandman,
North Carolina Extension Service.

Beef calf club work was started in North Carolina in 1935 when the Asheville Chamber of Commerce instituted a fat stock show in the fall of that year and offered liberal premiums on fat steers.

The first show was a disappointing affair with only one steer fat enough to grade Choice and the majority classifying as fleshy feeders. The sale average was \$7.74 per hundredweight including the champion. Many were in favor of giving up and discontinuing the show. A few of the stout-hearted, however, wanted to try it again. The second show was quite superior to the first and there has been a steady improvement in the quality and finish of the steers each year since. A class for feeder calves was added in 1937. This class has grown from only a few head the first year to some 40 head in 1939.

The 1939 show was the best ever held in Asheville and while the best animals were carried on to the State fair, those sold brought an average of \$12.08 per hundredweight, practically all going to local packers, retailers, and hotels.

In 1936 the State fair offered a small classification and premium list for 4-H club steers which has been increased each year. The town of Rocky Mount in eastern North Carolina came in with a fat stock show in the spring of 1938. This, like Asheville is a district show and both have classes in which the youngsters and adults compete, although the 4-H club members dominate the show both in number of head shown and top premiums won.

The North Carolina State fair under State management for the past two years has been liberal with premiums offered on 4-H club steers, and as a result this department has attracted much attention. Local buyers with the idea of increasing the interest in beef production in the eastern part of the State have supported the sales well and practically all the beef has been retailed in towns close to where it was fed. The sale this year held in connection with the State fair resulted in an average of \$15.70 per hundred pounds. Exclusive of the champions the average was \$13.65.

The best thing about beef calf club work in our State is that it is calling attention to better cattle. Farmers are learning through the boys that they must use better bulls in order to improve their herds. One class in particular is pointing out the bulls which are siring the good calves. This is the get-of-sire class. Entries in this class consist of three steers bred and fed in the county from which they are

shown and the get of a registered bull of one of the beef breeds. The steers do not necessarily have to be owned by one exhibitor. The purpose of this class is to encourage the raising of the right kind of cattle locally rather than to have to go outside the county or State for them.

Another interesting feature of baby beef club work in North Carolina is the fact that a number of boys have started breeding herds as a result of the interest aroused. Several have started purebred herds. Joe Brown of Deep Gap in Watauga County has fed five steers in the past three years. That Joe is a good feeder is evidenced by the fact that one steer gained 3.1 pounds per day for 164 days. Joe has had two reserves and one grand champion either at the State fair or Asheville. This year he showed the grand champion Hereford bull at the State fair and plans to buy some registered females for starting a purebred herd.

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NEW TREATMENT FOR SCREW WORMS

An effective and economical way to protect livestock from screw worms has been developed by the Bureau of Entomology and Plant Quarantine. It is estimated that the screw worm each year kills livestock worth several million dollars in the South and Southwest.

The new treatment consists in applying finely ground diphenylamine--a crystalline chemical long used in the dye industry, to any break in the skin of cattle, sheep, horses, or hogs that may be exposed to screw worm flies that lay the eggs from which the destructive worms hatch.

Diphenylamine, the Bureau's tests show, poisons young screw worms hatching out in wounds on animals. Enough of this powdered chemical to kill any worms that may hatch for several days will stick to the animal tissues. The Bureau recommends applications every three days until all injuries have entirely healed. Other screw worm treatments recommended by the Department of Agriculture must be used every day for satisfactory results.

Diphenylamine, the Bureau warns, will not kill large screw worms. Benzol still is prescribed for the first treatment of wounds that have become infested. Once the large worms have been killed by benzol, however, applications of diphenylamine every three days will prevent the development of others.

Diphenylamine has the advantage of being nonpoisonous to animals, as well as easy to apply and low in cost. Methods of using this material against screw worms and information as to where it may be obtained is available from the Bureau of Entomology and Plant Quarantine, U.S. Department of Agriculture, Washington, D. C.

---U.S.D.A. Press Release

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WOOL IMPROVEMENT IN NEW MEXICO

By George F. Ellis, Extension Animal Husbandman,
New Mexico Extension Service.

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During the past two years the Extension Service in New Mexico has been placing emphasis on sheep work, especially on the preparation of wool for market in such a way that growers will realize a larger income from it. Our State has had the reputation of producing a rather poor wool clip and since we have a sheep population of more than two million, which produce about 16 percent of the total agricultural income of the State, it was felt that some educational work along this line was amply justified. This is a new project, little work having been done until two years ago.

The work was first begun by conducting meetings in most of the counties, at which demonstrations on proper methods of preparing wool for market were conducted. James W. Christie of the Bureau of Agricultural Economics, assisted with the series of meetings last spring. In these meetings, it developed that ranchers throughout the State are generally not very familiar with the market grades of wool nor with the shrinkage of their wool. Their wool clips have been sold for years on an estimate by the buyer of what the clip would shrink, and the producers have had little chance to check on the accuracy of these estimates. To meet this situation a plan was developed whereby wool clips from all parts of the State, and representing as many different conditions as possible, would be sampled and shrinkage determinations made. This was possible by the fact that the Experiment Station this year installed a wool scouring laboratory and made its facilities available to the Extension Service. In a hunt for cooperators, 16 wool growers were found who owned about 50,000 head of sheep, which produced more than 450,000 pounds of wool.

The project had several purposes. The intention was to gather data on the various grades, also, to study the factors which affect the shrinkage and try to find what could be done about some them. In connection with the sampling work, it was planned to gather information on the wool produced per sheep in various flocks, and it was hoped to be able to demonstrate the feasibility of culling for increased production. One of the principal aims of the project was to familiarize the ranchers with different grades of wool and enable them to judge accurately the amount of shrink. It was hoped also to demonstrate the importance and the practicability of reducing shrink by management practices.

Each of the clips involved in the project was sampled following

a plan developed by the Bureau of Agricultural Economics. Cooperating ranchers were asked to number their wool sacks consecutively as they were filled, and representative sample sacks were selected at uniform spacings throughout the clip. Fleeces in these sacks were graded and weighed, a record of the weights and numbers of fleeces in each grade being kept. Small hand samples were then taken from the fleeces in the sample bags. Information was gathered from each of the ranchers regarding management practices and the number of sheep of each class in the flock. The samples were then taken to the laboratory where shrinkage determinations were made. The amounts of dirt and grease were determined separately. Following the laboratory work, detailed reports were made to each cooperator, giving him a complete picture of the wool production in his herd. These reports showed the production, per sheep, of both clean and grease wool. They also showed the number of sheep in the flock producing wool of each grade, and the shrinkage of the wool in each grade. In addition, they showed the average production per sheep for the entire herd, as well as the number of sheep producing fleeces of each weight from 4 to 14 pounds. The total pounds of wool in the clip and the average shrink for the entire clip were shown. Later the results of the entire project were summarized and sent to the cooperating ranchers so that they would be able to compare their flocks with others represented in the project.

One of the encouraging results of the work has been a great increase in the interest among the sheepmen. They are beginning to think seriously about the possibility of reducing the shrink of their wool clips and increasing the wool production in their flocks. Many of them are rather closely following the progress of the project.

As a result of the project it has been possible to establish a number of facts. First, it was shown that sheep which produce wool of a long staple, regardless of the grade of the wool, always produce more pounds of clean wool than do the shorter-wool sheep. Second, sheep which are run loose under fence, generally produce lighter-shrinking wool than sheep which are herded. Third, much of the shrinkage in our wool is due to a high percentage of dirt which can be controlled by management practices. Fourth, many sheep in most herds are poor wool producers and there is a possibility of increasing wool production by careful culling.

The project was not set up with the idea of securing information for the cooperating ranchers alone, therefore, the facts which were found have been brought to the attention of as many wool growers as possible. At a large meeting of sheepmen in the northern part of the State the project was discussed and the results obtained were presented. Articles have been prepared for livestock papers in the State, and radio talks have been broadcast, giving the results of the shrinkage tests.

Most of the cooperating ranchers have been anxious to compare their clips with those of their neighbors, so many more sheepmen than those actually cooperating have been able to get some understanding of the grade and shrinkage of the wool they are producing. It is planned to present a report on the project to the annual meeting of the New Mexico Wool Growers' Association next February, and much of the information gathered will be demonstrated at a series of sheepmen's meetings planned for next spring.

It is felt that the information accumulated can be used by producers in a number of different ways. Probably the most important way in which it can be used is in the modification of the management plan to reduce shrinkage and increase wool production. It has been ably demonstrated that culling for increased production and for uniformity of clip is justified and will produce results. Studies have also shown that care in selecting rams with the right type of fleece is a paying practice for the range wool grower. Since the dirt content of most New Mexico clips of wool needs to be reduced, systems of herding and bedding which will keep the sheep on clean ground and away from dusty, dirty bed grounds appear to be useful practices. In this connection it has also been found that a conservative rate of stocking is a paying proposition since it leaves a better cover of vegetation on the ground and reduces the amount of dirt in the wool.

Another way in which the wool information will be of use is in the marketing of wool. The producer knowing what his clip shrinks and grades will be in a better position to judge whether or not he is being made a fair offer by the buyer.

It is planned to go ahead with this work another year and cooperating ranchers appear to be enthusiastic about continuing.

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SWINE TYPE STANDARDS

The important features to emphasize in building and maintaining a swine type are reproductive ability, economic feeding ability, ruggedness of constitution, attractiveness in general appearance, and adherence to the standards of the breed to which the animal belongs.

-----J. S. Coffey

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SCIENTISTS have much too industriously invented several widely different systems of words, signs, and notations to express information about the same identical matters of experience. Many times new terms have been coined when old ones would have sufficed. Each scientific specialty prides itself upon having its own distinctive language. Therefore doctors, chemists, bacteriologists, and immunologists cannot comprehend one another until translated. For "man has always had a capacity for adding to his happiness or to his terrors by substituting long words for short one." -- T. Swann Harding

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MICHIGAN'S PUREBRED RAM TRUCK

By E. L. Benton, Extension Specialist in Animal Husbandry,
Michigan State College

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Michigan's ram truck sponsored by the Michigan Pure Bred Sheep Breeders' Association has for the twelfth consecutive year just completed its annual trek throughout the State. Thirty-nine counties were visited, some for a half day and some for a full day. Six weeks elapsed and 2,500 miles were covered during the time of travel from the Ohio line north to and into the upper peninsula. A double deck semi-trailer carried up to 80 rams at a time. When within a radius of 100 miles of the college, the truck would go in Friday night to leave what rams had not been sold that week. On Saturday (or Sunday if necessary) the next week's load was sorted into pens for loading. Rams to fill orders on hand and rams of breeds and types required for various sections in the State had then to be selected. Shropshires predominate throughout southern Michigan, in fact equal in number all other breeds together. The fourth week out saw the greatest number of sales when 56 head were sold. Hampshire and Oxford sales predominated that week and were in the section north of Saginaw valley through to Alpena.

Some trading was done. Wherever sheepmen appeared with a ram they could no longer use we encouraged and assisted their trading among themselves. Where men could not be taken care of in this manner we traded with them, providing of course that their rams had registration papers, that they were free of external parasites, were in good breeding condition, that their mouths were not overshot and that they were desirable rams that would sell readily. The next step required mutual agreement on the financial consideration in the deal. On rams of equal value we endeavored to collect five dollars difference to help take care of feed and transportation expenses. Little complaint over this was encountered because of the service it rendered to the purchaser. Sixty trades were made during the trip. Rams taken in were figured at the value for which they would sell minus \$5. Few deals represented sale of more than one animal to a buyer.

Prices of yearlings, consigned by breeders on the truck varied from \$30 to \$50, with the average at \$35. The 3-year olds accepted on trade were priced to sell at \$25 to \$35. One 6-year-old Shropshire sold at \$15 and two 6-year-old Shropshires, also one 7-year-old Shropshire sold for \$10 each. These four rams had exceptionally good mouths and teeth; they were in satisfactory condition and sold readily.

This project is sponsored and operated through the cooperation

of three organizations. The membership of the Michigan Pure Bred Sheep Breeders' Association provided the rams and maintained ownership and responsibility until the animals were sold. They also sent one member (Ivan Bursley, an Oxford breeder) to assist in the salesmanship. The Michigan Livestock Exchange of the Detroit Stock Yards, a cooperative livestock marketing commission firm provided Bert Hoben, their own lamb grader for demonstrational and lamb grading work at the various stops. Michigan State College, the third agency, more or less assumed responsibility for making up the schedule, handling reports, also educational demonstrations and discussions in the different counties, this being done by the extension specialist. These three men plus the truck driver fed, watered, loaded and unloaded the sheep in addition to their other duties.

For educational demonstrations two pens consisting of three sheep each were carried. The idea originated when the specialist visited a farm where a big rough mongrel ram weighing 225 pounds was used as the sire. The lambs were very inferior with their narrow chests, shallow bodies, narrow loins and light hind legs. The ewes were of average quality but the entire flock was to be sold because the lambs were poor. Talk could not convince these folks that a good purebred ram would give them uniform lambs of quality. The ram was purchased with one of his lambs and the lamb's mother for \$14. On another farm 10 miles away a similar flock was found in which was a registered Shropshire ram which the owner had purchased in a local auction out of breeding season for \$3. His lambs were uniform, thick and deep. This ram was borrowed with one lamb and the lamb's mother. These two pens side by side with signs indicating the story drew considerable attention and the discussion around them sold some purebred rams for the truck. The lamb from the purebred ram weighed 65 pounds and the lamb from the scrub weighed 58 pounds. Both lambs were the same age and had been handled similarly.

On Michigan markets the good lamb would have sold at 9¢ a pound as a feeder, and the poor lamb at 7¢. This made the good lamb worth \$5.85 and the poor lamb \$4.06. These prices multiplied by 50 (the illustrative figure used in discussions to indicate an average lamb drop from a ram) gave the lamb crop value at these ages as \$292.50 and \$203 or a difference of \$89.50 return in favor of the good ram. Such argument gave a buyer little argument in favor of using a scrub ram he could purchase for a few dollars and could readily see the value of good breeding.

The purebred rams offered for sale were selected at a State-wide ram show held September 23 at the college. Seventy-eight breeders brought 321 rams of all popular breeds. These rams were graded by a judging committee. Those marked green on the shoulder were recommended for purebred flocks. Those marked red on the shoulder were recommended for grade flocks. Those receiving no mark at all were sent home. One hundred and eighty-one of those top rams were held at the college for

ran truck disposal. Of this number 174 were sold, namely 83 Shropshires, 55 Oxfords, 28 Hampshires, 4 Black Tops, 2 Cheviots, 1 Cots-wold, and 1 Rambouillet.

This project is rather expensive financially to the breeders, as operation costs approximately 15 percent of receipts. However, it has materially improved the quality of the sheep throughout the State and provided a market for the purebred breeders. Each consignor signed a consignment slip listing his rams and indicating they were in proper condition and that he assumed responsibility until they were sold. Each purchaser likewise signed a purchase slip which listed his dealing and that he expected no guarantee further than its being a healthy animal that would be replaced should he fail to breed.

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RANCHMEN INTERESTED IN CATTLE-GRUB CONTROL

During the winter of 1937-38, 265 Hereford cattle on a 32,000-acre ranch in King County, Tex., were treated with a cube-powder wash to determine the feasibility of using this treatment for the control of cattle grub on range animals. The insecticide consisted of 1 pound of cube powder (90 percent 250-mesh to 4 percent rotenone) in suspension in 1 gallon of water containing approximately 4 ounces of home-made lye soap. The wash was thoroughly applied to the backs of the animals by rubbing it into the hair with a stiff fiber brush. About 8 ounces of the wash was used for each animal, and it was possible for 4 men to handle and treat 100 animals an hour. The treated animals were segregated in a 10-section pasture surrounded by other pastures comprising some 227,000 acres, and on which were run a proportionate number of untreated cattle.

A check on the degree of infestation in treated and untreated animals during the fall of 1938, after the animals were exposed during one heel-fly season after the application of the treatment, showed an average of only 1.06 grubs a head in the treated animals; whereas, an average of 7.08 grubs a head were found in untreated animals running in adjoining pastures. Among untreated calves born after the adults were treated but before or during the heel-fly season and allowed to run on the same pasture as the treated animals, there was an average of 4.11 grubs per head. Calves born at approximately the same time but run on the pasture with the untreated adults were infested with an average of 12.4 grubs a head. The apparent great reduction of cattle-grub infestation as shown by this test has encouraged the owner of the ranch to treat all his cattle during the coming winter.

Owners of neighboring ranches were interested in the results obtained, and indicated that they would begin treatments of their cattle this season. R.R. Reppert, Texas State extension entomologist, and H.T. Hackney, county agent, King County, initiated the tests and E.W. Leake, of the Bureau of Entomology and Plant Quarantine's, Dallas, Tex., laboratory, cooperated in the checking of results. --The Extension Entomologist

SHEEP WORK IN TENNESSEE

By J. S. Robinson, Assistant Extension Animal Husbandman,
University of Tennessee

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Some of our 1939 activities in the sheep field are set forth in the following paragraphs.

Among the significant accomplishments was the distribution of 4,260 head of crossbred Montana yearling ewes for the establishment of 275 demonstration flocks in 40 counties of the State. In addition, 540 head of good yearling Rambouillet ewes obtained in Texas were placed in three Cumberland plateau counties. These Rambouillet ewes are to be bred to Hampshire and Dorset rams in an effort to produce a satisfactory crossbred ewe on the range in Tennessee.

Of the Montana crossbred ewes, 1,085 head were placed with 72 adult farmers without previous experience in sheep raising, while 310 head went to 38 4-H club members who are taking their initial step in commercial sheep production.

Fifty head of the Montana yearlings were placed on the Middle Tennessee experiment station farm at Columbia, where for the next few years they will be compared with equal numbers of "native" ewes (from the bluegrass counties of the State) and of "plateau" yearlings, for spring lamb production.

Twenty-nine counties of the State have organized or now are in process of organizing sheep indemnity associations against losses from dogs. These organizations have adopted the plan of mutual insurance incorporated in the "Sheep Producers' Indemnity Act" which was passed by the last session of our General Assembly. Some 60,000 head of sheep are now protected by this mutual insurance feature and additional numbers will be covered as county set-ups are completed. The details of this mutual insurance plan were included in an article entitled "Sheep Protection in Tennessee" carried in the August 1939 issue of "The Sheepman," published at Lexington, Ky.

Independent introductions of western ewes, mostly of Rambouillet breeding, numbered approximately 1,500 head to Smith County, 574 to Pickett County, 400 to Clay County and about 250 each to Putnam and Jackson Counties. The First National Bank of Clarksville was responsible for the placing of 750 good crossbred yearling ewes with farmers in its trade territory and also introduced 75 head of Hampshire rams from Montana.

In our 1939 breeders' ram sales a total of 223 head of purebred rams were sold at an average price of \$37.50 per head. We have now come to the place in the re-establishment of our sheep industry where we are badly in need of more good rams for use in our commercial flocks.

During the period from April 3 to 11, R. C. Miller, Kentucky sheep specialist was with us in the holding of 13 meetings where the replacement ewe problem was a major part of the discussions. Some 1,000 farmers and 70 county agricultural agents attended these meetings which were in all sections of the State.

The commercial phases of the State-wide western ewe introduction project were handled by a responsible dealer who was willing to advance the money and conform to the program details which we had worked out. The ewes were delivered to the farmers at about \$10 per head.

Interest in the general program has been so great that it was necessary to prepare and issue a special publication which was mimeographed as special circular No. 105 under the title, "Ewes for Spring Lamb and Wool Production - with Management Suggestions". Later a brief printed circular, No. 9554, entitled "Western Range Ewes for Commercial Farm Flocks" was prepared.

Improvement in shearing techniques and in better fencing for sheep are other matters receiving considerable attention.

Paul Hite, our new sheep specialist, was appointed on July 1 and immediately became responsible for the major portion of activities in the field of sheep husbandry. The outlook is promising for sheep in Tennessee although much educational work will be required to keep the industry on a sound basis.

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4-H CLUB WORK

4-H Club work comes in contact with rural youth at the most impressionable period of their life. What 4-H Club leaders think, what 4-H Club leaders do, the standards of life they have, the ideals they strive for, will in large measure be imparted to 4-H Club members and be carried with them throughout life wherever they go. That is why 4-H Club leaders will continue to fit themselves the better to guide and carry on their work. They realize their responsibility to youth and the Nation. That is why State and National legislators and county commissioners are so willing to financially support 4-H Club work. That is why 4-H Club work will double in membership and importance in the next 25 years. Keep 4-H Club work out of politics. Keep it clean. Keep it a part of adult agricultural extension and in touch with the soil. Keep its consecrated leaders of men and women and it will continue the most significant rural institution we have in America.

--From address of Dr. C.B. Smith, Minneapolis, Minn., July 1939.

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PERSONNEL ITEMS

Alaska

I.M.C. Anderson formerly extension animal husbandman in Montana and more recently district extension agent in the Alaskan extension service, is now livestock specialist for the Alaskan territory with headquarters at College.

Illinois

Harry G. Russell, assistant animal husbandry specialist, attended the 1939 National Agricultural Outlook Conference in Washington as a representative of the Illinois Extension Service.

Montana

Howard G. Lewis, extension animal husbandman in the Montana Agricultural Extension Service, has submitted his resignation to become effective February 1, 1940. Mr. Lewis will take over the management of a ranch in the Madison Valley of Montana on that date.

New York

Gordon S. Cairns, formerly a member of the animal husbandry extension staff at Cornell is now head of the animal husbandry department at the University of Maine, Orono.

Oklahoma

Effective October 1, 1939, Paul G. Adams returned to his old post at the Oklahoma A. & M. College in charge of livestock extension work. For some four years before, Mr. Adams was secretary of the National Live Stock Exchange with headquarters in Chicago.

Virginia

Kenneth E. Litton, animal husbandry specialist in the Virginia Extension Service, resigned his position effective January 1, 1940, to accept the management of Morlunda Farms at Lewisburg, W. Va. J.P. Keen, former Virginia animal husbandry specialist, and now operating a livestock farm in Jefferson County, W. Va., won the grand championship award on carlot of fat steers in the Baltimore (Md.) Live Stock Show in October. This was the second year in succession that Mr. Keen's entries won the same high honors.

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I know no safe depository of the ultimate powers of society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them but to inform their discretion by education. --Thomas Jefferson

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Raymond Evans, In Charge

RECENT PUBLICATIONS

(This list is limited to publications of interest to extension workers. In most cases copies are available from the institution or agency issuing them. Do not write Washington for other than U.S.D.A. publications.)

Federal

"Food and Life" - Yearbook of Agriculture, 1939 - U.S.D.A., Washington, D.C., pp. 1165.

"Report of the Chief of the Bureau of Animal Industry, 1939" - Bureau of Animal Industry, U.S.D.A., Washington, D.C. - pp. 82.

"Trends in Livestock Slaughter" by Knute Bjorka, Bureau of Agricultural Economics, U.S.D.A., Washington, D.C., Sept. 1939, Mimeo. pp. 29.

"Production Costs and Returns" by M. R. Cooper, Bureau of Agricultural Economics, U.S.D.A., Washington, D.C., June 1939, Mimeo. pp. 38.

"Agricultural Outlook Charts, 1940" (three separate publications for beef cattle, hogs, and sheep, lambs and wool) - Bureau of Agricultural Economics, U.S.D.A., Washington, D.C., pp. 23, 19 and 24, respectively.

"Training Extension Workers for the Job" by M. C. Wilson, Extension Service, U.S.D.A., Washington, D.C. - Extension Service Circular 315, Nov., 1939, Mimeo. pp. 39.

"Meeting the Challenge of Agriculture" (A Report of Extension Work in Agriculture & Home Economics in 1936) - Extension Service, U.S.D.A., Washington, D.C., 1939, pp. 104.

"Serving Farm People on Many Fronts" (1937 Annual Report of the Extension Service) - Extension Service, U.S.D.A., Washington, D.C., 1939, pp. 40.

"Indicators of Southwestern Range Conditions" by M. W. Talbot, Forest Service, U.S.D.A., Washington, D.C. - Farmers' Bulletin 1782, Dec. 1937, pp. 35.

"Effects of Fire and Cattle Grazing on Longleaf Pine Lands as Studied at McNeill, Mississippi" by Wahlenberg, Greene, and Reed, Forest Service, U.S.D.A., Washington, D.C. - Tech. Bul. 683, June 1939, pp. 52.

"Progress Report of the Regional Research Laboratory for the Improvement of Swine Through Breeding" - Bureau of Animal Industry, U.S.D.A., Washington, D.C. - June 1939, Mimeo. pp. 41.

"The Influence of Climate and Grazing on Spring-Fall Sheep Range in Southern Idaho," by G. W. Craddock and C. L. Forsling, Forest Service, U.S.D.A., Washington, D.C., Feb. 1938, pp. 42, illus. & charts.

"Reseeding Range Lands of the Intermountain Region," by George Stewart, R. H. Walker and Raymond Price, Forest Service, U.S.D.A., Washington, D.C., July 1939, pp. 25, illus.

"Weather and Plant Development Data as Determinants of Grazing Periods on Mountain Range," by David F. Costello and Raymond Price, Forest Service, U.S.D.A., Washington, D.C., Tech. Bul. 686, May 1939, pp. 29, with tables and graphs.

State

"Protein Supplements for Swine" by Z. A. Massey, Georgia Experiment Station Circular 118, July 1939, pp. 8.

"Raising Ton Litters in Indiana," by J. W. Schwab - Indiana Extension Service Bulletin 223, June 1939, pp. 8, Figs. 8.

"Raising Pigs" (For 4-H Club Members), by Howe W. Hall - Maine Extension Service Bulletin 264, July 1939, pp. 8.

"Beef Production" by M. E. Ensminger - Massachusetts Extension Service Leaflet No. 183, Oct. 1939, pp. 56, Figs. 25.

"Guides for Horse Buyers", by R. S. Hudson - Michigan Extension Service Bulletin 197, June 1939, pp. 53, Figs. 58.

"4-H Colt Club Manual" - Michigan Extension Service Club Bulletin 39, June 1939, pp. 47, Figs. 19.

"Farm Organization for Beef Cattle Production in Southwestern Minnesota," by George A. Sallee, George A. Pond, and C. W. Crickman - Minnesota Experiment Station Technical Bulletin 138, Aug. 1939, pp. 80, Figs. 13, Tables 40.

"Refrigerated Locker Service for Rural Patrons," by S. T. Warrington - Minnesota Extension Service Bulletin 202, June 1939, pp. 16.

"Livestock Weights from Measurements - The Minnesota Method" by D. W. Johnson - Minnesota Extension Service Folder 70, May 1939, Figs. 3.

"Animal Husbandry Handbook for County Agricultural Agents," by W. W. Derrick, et al. - Nebraska Extension Service, Oct. 1939, Mimeo. pp. 35.

"Draft Horse Management," by Ross H. Miller - Nebraska Extension Service Circular 206, Aug. 1939, pp. 43, illus.

"Cottonseed Meal for Fattening Yearling Steers," by J. H. Knox and P. E. Neale - New Mexico Experiment Station Bulletin 262, May 1939, pp. 15.

"Changes in Meat and Wool Characteristics Resulting From the Use of Purebred Mutton Rams on Native Ewes" by J.E. Foster and Earl H. Hostetler - North Carolina Experiment Station Technical Bulletin 60, Apr. 1939, pp. 27, illus. and tables.

"Production of Firm Pork From Peanut-Fed Pigs" by Earl H. Hostetler, et al - North Carolina Experiment Station Technical Bulletin 61, June 1939, pp. 44, with tables and graphs.

"The Protein Requirements of Farm Animals" - Ohio Experiment Station Special Circular 58, Aug. 1939, pp. 12.

"Farm Manure," by Robt. M. Salter and C.J. Schollenberger - Ohio Experiment Station Bulletin 605, Sept. 1939, pp. 69, tables 38.

"Trend of Motor Transportation Rates for Livestock," by George F. Henning - On page 142 of Ohio Experiment Station Bimonthly Bulletin No. 200, Sept.-Oct. 1939.

"An Experimental Study of Inbreeding and Outbreeding Swine," by O.S. Willham and W.A. Craft - Oklahoma Experiment Station Technical Bulletin 7, Sept. 1939, pp. 43, tables 21.

"Marketing the Surplus Wheat of the Pacific Northwest Through Livestock," by E.L. Potter and H.A. Lindgren - Oregon Extension Service Bulletin 527, June 1939, pp. 24, illus. and tables.

"Wool - Shearing, Grading and Marketing" by G. A. McDonald - South Dakota Extension Service Min. Circ. 212, May 1939, pp. 11.

"Tankage, A Protein Supplement for Fattening Beef Calves," by James W. Wilson and Turner Wright - South Dakota Experiment Station Bulletin 329, June 1939, pp. 15, illus and tables.

"Swine Production - A Manual for 4-H Club Members," by G. A. McDonald - South Dakota Extension Service Circular 378, Dec. 1938, pp. 47, illus.

"Profitable Swine Raising in Utah," by Harry H. Smith - Utah Extension Service Circular 99, June 1939, pp. 24, Figs. 7.

"Phosphorus in Wyoming Pasture, Hay, and Other Feeds," by O. C. McCreary - Wyoming Experiment Station Bulletin 233, June 1939, pp. 20.

Other

"1940 Feeding Practices" - Bulletin 16, Educational Service, National Cottonseed Products Association, Inc., 1411 Santa Fe Building, Dallas, Texas - pp. 48, illus.

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